

In re Patent Application of:  
**HOGAN ET AL.**  
Serial No. 10/700,948  
Filed: OCTOBER 31, 2003

---

### REMARKS

Claims 1 to 13 were previously pending. Claims 1 to 13 have been rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent Publication No. 2003/0063872 (Govan Date et al.) in view of United States Patent Publications Nos. 2002/0130249 (Dormer et al.) and 2002/0196820 (Sato et al.), United States Patents Nos. 5,029,306 (Bull et al.) and 4,945,400 (Blonder et al.), and European Patent Application No. 1,329,753 (Martyn et al.).

The claims of the application have been amended to overcome the objections of the Examiner and to better define the invention in light of the prior art. In particular, claim 1 has been amended to clearly define the electrical circuit as a differential drive circuit including six trace leads, in which at least one of the trace leads has a film resistor formed therein to match laser impedance to an impedance of a transmission line and to an output impedance of a laser driver integrated circuit, and in which at least one of the trace leads has a inductive choke component disposed therein to enable DC current to be fed to the laser diode without a reduction in the RF signals.

A differential drive circuit provides faster rise/fall times, better symmetry in the rising and falling edges, and less duty cycle distortion, which result in improved optical eye diagrams with increased design margin to specified eye mask limits. Constructing the differential drive circuit with trace leads within a substrate, particularly a ceramic substrate contiguous with the ceramic feedthrough (claim 13), provides these benefits in a small form factor package.

In re Patent Application of:

**HOGAN ET AL.**

Serial No. 10/700,948

Filed: **OCTOBER 31, 2003**

---

Furthermore positioning the film resistor and the inductive choke component within the RF and DC trace leads, respectively, within a small form factor TOSA housing enables a small form factor TOSA to operate with improved performance and at higher data rates than were previously achievable.

New claim 14 has been added to ensure all aspects of the invention are protected, in particular the specific advantage provided by the present invention enabling the inductive choke component to be positioned extremely close to the laser diode, e.g. within 1 mm, whereby high data rates of 10 GB/s and higher can be achieved without unwanted resonance.

None of the cited prior art alone or in combination disclose the advantages of a differential drive system integrated within trace leads in a TOSA housing with film resistor and inductive choke components provided within the trace leads, enabling high performance from a very small package, which is both novel and unobvious.

As such, it is respectfully submitted that all of the claims remaining in the application are in condition for allowance. Early and favorable consideration would be appreciated.

Should any minor informalities need to be addressed, the Examiner is encouraged to contact the undersigned attorney at the telephone number listed below.

Please charge any shortage in fees due in connection with the filing of this paper, including Extension of Time fees, to

In re Patent Application of:

**HOGAN ET AL.**

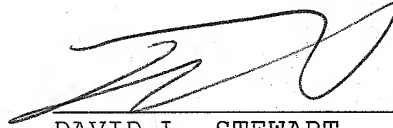
Serial No. **10/700,948**

Filed: **OCTOBER 31, 2003**

---

Deposit Account No. 50-1465 and please credit any excess fees  
to such deposit account.

Respectfully submitted,



---

DAVID L. STEWART

Reg. No. 37,578

**CUSTOMER NO. 27975**

Telephone: (321) 725-4760

Date: February 6, 2007